SOCIAL BACKGROUND IN SCHOOL ATTAINMENT AND JOB MARKET

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MOTIVATIONS

- Social background influences:
  - Educational results (Haveman and Wolfe, 1995, Galindo-Rueda and Vignoles, 2005, and Marcenaro-Gutierrez et al., 2007).
  - Job opportunities (Glyn and Salverda, 2000, Berthoud and Blekesaune, 2006).

- Our purpose here is to provide a theoretical basis to this empirical evidence.
We study the interaction between a single school and a single employer.

This occurs as agents serve a number of students, with measure normalised to one.
THE MODEL: SCHOOL

- The school prepares its students for the final exam.
- Possible outcomes: a low or a high grade.
- Students differ in ability: high ($\theta_H$) or low ($\theta_L$).
- Students can be disadvantaged ($d$) or advantaged ($a$).

- $\lambda \in [0,1]$ is the amount of $a$.
- $p_a, p_d \in [0,1]$ are the probability that a high-ability student is $a$ or $d$, respectively, where $p_a > p_d$. 
THE MODEL: SCHOOL

- Benefit for the school if a student is hired: $\mu$.

- The school can provide students with extra teaching.

- If the school provides extra teaching to a
  - $\theta_H$, $p\text{(high grade)}=1$, otherwise $p\text{(high grade)}=\eta \in (0,1)$.
  - $\theta_L$, $p\text{(high grade)}=\eta \in (0,1)$, otherwise $p\text{(high grade)}=0$.

- Cost of extra teaching: $c > 0$. 

THE MODEL: EMPLOYER

- The employer decides whether or not to hire a student.
- The students’ ability determines the employer’s profit entirely.
- The employer obtains a profit denoted by $\nu > 0$ if the student is $\theta_H$ and -1 is the student is $\theta_L$.
- The labour demand is $\Phi < 1$. 
THE GAME

- **Stage 1.** Nature randomly provides a student.

- **Stage 2.** The (advantaged/disadvantaged) school chooses whether to provide the student with extra teaching.

- **Stage 3.** The employer decides whether to hire the student knowing her grade and social background.
Assumption 1. (i) $\Phi \in (\lambda(p_a + (1 - p_a)\eta) + (1 - \lambda)p_d,$
\[\lambda(p_a + (1 - p_a)\eta) + (1 - \lambda)(p_d + (1 - p_d)\eta) \cdot\]
(ii) $\mu > \max\left\{ \frac{c}{\eta}, \frac{c}{1-\eta} \right\}$.

Definition 1. “High-employment equilibrium”.

- The advantaged school gives extra teaching to each student with probability 1; the disadvantaged school gives extra teaching to $\theta_H$ with probability 1 and to $\theta_L$ with probability $\frac{\Phi - \lambda(p_a + \eta(1-p_a)-(1-\lambda)p_d)}{p_d + \eta(1-p_d)}$.
- The employer hires an $a$ and high-grade student with probability 1, an $a$ and low-grade with probability 0, a $d$ and high-grade with probability $\frac{\Phi - \lambda(p_a + \eta(1-p_a))}{p_d + \eta(1-p_d)}$ and a $d$ and low-grade with probability 0.
Equilibria

Definition 2. “Middle-employment equilibrium”.

- The advantaged school gives extra teaching to each student with probability 1; the disadvantaged school gives extra teaching to \( \theta_H \) with probability 1 and to \( \theta_L \) with probability

\[
\frac{\Phi - \lambda (p_a + \eta (1-p_a))}{p_d + \eta (1-p_d)} \frac{p_d}{(1-p_d)} \frac{\nu}{\eta}.
\]

- The employer hires an a and high grade student with probability 1, an a and low-grade with probability 0, a d and high-grade with probability

\[
\frac{\Phi - \lambda (p_a + \eta (1-p_a))}{p_d + \eta (1-p_d)} \frac{c}{\mu \eta}
\]

and a d and low grade with probability 0.
Definition 3. “Low-employment equilibrium”.

- The advantaged school gives extra teaching to each $\theta_H$ and to $\theta_L$ with probability \( \frac{p_a}{(1-p_a)} \frac{\nu}{\eta} \); the disadvantaged school gives extra teaching to $\theta_H$ with probability 1 and to $\theta_L$ with probability \( \frac{\Phi-\lambda(p_a+\eta(1-p_a)-(1-\lambda)p_d)}{p_d+\eta(1-p_d)} \frac{p_d}{(1-p_d)} \frac{\nu}{\eta} \).

- The employer hires an $a$ and high grade student with probability \( \frac{c}{\mu\eta} \), an $a$ and low-grade with probability 0, a $d$ and high-grade with probability \( \frac{\Phi-\lambda(p_a+\eta(1-p_a))}{p_d+\eta(1-p_d)} \frac{c}{\mu\eta} \) and a $d$ and low grade with probability 0.
RESULTS

- **Proposition 1.** The high-employment equilibrium occurs if $p_a > \frac{n}{v+\eta}$ and $p_d > \frac{n}{v+\eta}$; the middle-employment equilibrium occurs if $p_a > \frac{n}{v+\eta}$ and $p_d \leq \frac{n}{v+\eta}$; the low-employment equilibrium occurs if $p_a \leq \frac{n}{v+\eta}$ and $p_d \leq \frac{n}{v+\eta}$.
RESULTS

\[ \Phi^* = \lambda(p_a + (1 - p_a)\eta) + (1 - \lambda)p_d \]
\[ \Phi^{**} = \lambda(p_a + (1 - p_a)\eta) + (1 - \lambda)(p_d + (1 - p_d)\eta) \]

\[ p_a = \frac{\eta}{v + \eta} \]

Proposition 1.
**Remarks**

- The middle area disappears as the number of students in one group goes to 0.
- The employer obtains, ceteris paribus, a higher expected payoff by hiring \( a \) students.
- Therefore the \( d \) students opportunity of being hired is only subsequent to the recruitment within the \( a \) community.
- By increasing \( \lambda \), regardless of the equilibrium, the probability of being hired for a high-grade and \( d \) student diminishes.
If we allow $\Phi$ to be lower than the amount of adv and high-degree students, then none of the disadv students will be hired.

If $p_a$ is low, the employer would hire an amount of high-grade and $a$ student lower than the number available.

If $p_d$ is low, the employer would hire an amount of high-grade and $d$ student lower than the residual $\Phi$.

The optimal response of the $d$ school to the employer's strategy is to provide less education than the one provided by the $a$ school, given the same students' ability.
THANK YOU!!!